



Iligan Institute of Technology
of the Mindanao State University
Quality Education for a better Mindanao

MASTER IN APPLIED STATISTICS

Introduction

The Master in Applied Statistics programs is designed primarily for non-BS Math or Statistics graduates but are practitioners of Statistics, with the objective to provide strong foundation in statistical methods and competence in using Statistical software.

As a professional program in Statistics, it offers adequate theory and training of the different statistical procedures which is enhanced through actual data gathering and analysis through the use of computers.

Objectives

1. Provide a strong foundation in statistical methods;
2. Introduce the methods for computing and data management

Admission Requirements

1. Bachelor's degree or its equivalent from a recognized institution of higher learning.
2. An adequate background in mathematics as determined by the Graduate Committee.
3. Other requirements as provided by the School of Graduate Studies Academic rules and regulations.

Degree Requirements

1. Complete a total of 39 units of course work which include 26 units of core course, 3 units elective, 4 units of seminar courses and 6 units of thesis work.
2. Successful defense of a thesis which is a research work on application of methods and evaluation of the methods used.

MASTER IN APPLIED STATISTICS (MAS)
(LIST OF COURSES BY SEMESTER)

First Year, First Semester

| Course No. | Course Title | Units | Hrs/Wk | | | Prerequisite(s) |
|------------|-----------------------|-------|--------|-----|-------|-----------------|
| | | | Lec | Lab | Total | |
| Stat 201 | Statistical Methods I | 3 | 3 | 0 | 3 | |
| Stat 221N | Statistical Computing | 3 | 2 | 1 | 3 | Stat 220 |
| Stat 231 | Statistical Theory | 3 | 3 | 0 | 3 | |
| | Total | 9 | 8 | 1 | 9 | |

First Year, Second Semester

| Course No. | Course Title | Units | Hrs/Wk | | | Prerequisite(s) |
|---------------|-----------------------|-------|--------|-----|-------|--------------------------|
| | | | Lec | Lab | Total | |
| Stat 252 | Statistical Method II | 3 | 2 | 1 | 3 | Stat 201 |
| Stat 242 | Sampling Techniques | 3 | 3 | 0 | 3 | Stat 201 and Stat 231 |
| Stat 232 | Statistical Inference | 3 | 3 | 0 | 3 | Stat 201 and Stat 231 |
| Stat Elective | | 3 | 3 | 0 | 3 | |
| | Total | 12 | 11 | 1 | 12 | |

Second Year, First Semester

| Course No. | Course Title | Units | Hrs/Wk | | | Pre-requisite(s) |
|------------|--------------------------------|-------|--------|-----|-------|------------------|
| | | | Lec | Lab | Total | |
| Stat 243 | Data Collection and Management | 2 | 1 | 1 | 2 | Stat 201 |
| Stat 256 | Statistical Methods III | 3 | 2 | 1 | 3 | Stat 252 |
| Stat 258 | Multivariate Methods | 3 | 2 | 1 | 3 | Stat 252 |
| Stat 290 | Seminar Course in Stat I | 2 | 0 | 0 | 0 | |
| | Total | 10 | 5 | 3 | 8 | |

Second Year, Second Semester

| Course No. | Course Title | Units | Hrs/Wk | | | Pre-requisite(s) |
|------------|---------------------------|-------|--------|-----|-------|------------------|
| | | | Lec | Lab | Total | |
| Stat 300 | Master's Thesis | 6 | 0 | 0 | 0 | |
| Stat 291 | Seminar Course in Stat II | 2 | 0 | 0 | 0 | |
| | Total | 8 | 0 | 0 | 0 | |

COURSES OFFERED

| | |
|----------|--|
| Stat 201 | Statistical Methods |
| Stat 231 | Statistical Theory I |
| Stat 221 | Statistical Computing |
| Stat 232 | Statistical Inference |
| Stat 252 | Statistical Methods II (Regression & Correlation Analysis) |
| Stat 256 | Statistical Methods III (Experimental Designs) |
| Stat 242 | Sampling Techniques |
| Stat 223 | Data Collection and Management |
| Stat 258 | Multivariate Methods |
| Stat 290 | Seminar Course in Stat I |
| Stat 291 | Seminar Course in Stat II |

Stat 300 Master's Thesis

Stat Electives (6 units)

| | |
|----------|---------------------------------------|
| Stat 243 | Time Series Analysis |
| Stat 244 | Non-Parametric Statistical Techniques |
| Stat 226 | Categorical Data Analysis |
| Stat 227 | Exploratory Data Analysis |
| Stat 236 | Stochastic Processes |

CATALOGUE OF COURSES

STAT 200 MATHEMATICS IN STATISTICS

This course is intended for those who do not meet the mathematics admission requirement of the program. It covers topics on differential calculus, integral, calculus, and matrices.

Credits : 5 units
Prerequisite(s) : Instructor's consent

STAT 201 STATISTICAL METHODS 1

This is a survey course in basic statistical methods which includes broad topics on frequency distribution; measures of central tendency, dispersion, kurtosis, skewness, association and relationship; sampling and theoretical distributions, estimation; tests of hypothesis; one-way ANOVA and some non-parametric methods.

Credits : 3 units
Prerequisite(s) : Instructor's consent

STAT 220 STATISTICAL COMPUTING

Introduction to computers and its operating system; principles of programming, DOS program, statistical programming with familiarization to available statistical softwares.

Credits : 3 units (2 units lec/1unit lab)
Prerequisite(s) : Adviser's consent

STAT 221N STATISTICAL COMPUTING

Computer programming using any high level language (Pascal, Fortran, Basic, C, etc.) Programming in SAS, SPSS, and other statistical softwares.

Credits : 3 units (2 units lec/1unit lab)
Prerequisite(s) : Stat 220 or adviser's consent

STAT 231 STATISTICAL THEORY

This is a course on introductory probability with applications which includes the basic probability structure, the concept of random variables, distribution function, the treatment of expectation and introduction of some special distributions such as binomial, poisson, etc.

Credits : 3 units
Prerequisite(s) : Instructor's consent

STAT 232 STATISTICAL INFERENCE

This course involves foundation topics of inference such as methods of estimation, hypothesis testing, and sampling distribution.

Credits : 3 units
Prerequisite(s) : Stat 201 and Stat 231

STAT 233 BIostatISTICS

Credits : 3 units
Prerequisite(s) : Instructor's consent

STAT 236 STOCHASTIC PROCESSES

Markov Chains, transition and absolute probabilities, irreducible Markov Chains, stationary stochastic sequences, Markov processes, discontinuous and continuous transitions, non-Markovian processes, stationary and stochastic processes.

Credits : 3 units

STAT 242 SAMPLING TECHNIQUES

Simple random sampling, stratified random sampling, ratio estimators, regression estimators, systematic sampling, single-stage cluster sampling, two-stage cluster sampling.

Credits : 3 units

Prerequisite(s) : Stat 201 and Stat 231

STAT 243 DATA COLLECTION AND MANAGEMENT

This course includes the study of sample survey design; planning a survey;

preparation of questionnaires; processing a data and preparation of reports.

Credits : 2 units

Prerequisite(s) : Stat 201

STAT 252 STATISTICAL METHODS II

This course is a sequel to Statistical Methods I and covers topics in regression analysis and introduction to time series analysis. Regression analysis includes topics on simple linear regression, multiple linear regression, selecting the best regression and regression diagnostics. Time series analysis includes topics on exponential smoothing, introduction to Box-Jenkins method and forecasting.

Credits : 3 units

Prerequisite(s) : Stat 201

STAT 253 TIME SERIES ANALYSIS

Time series, stationary time series, autocorrelation, moving average process, autoregressive time series, prediction, estimation for moving average and autoregressive time series, regression, trend and seasonality, Box-Jenkins methodology, forecasting.

Credits : 2 units

Prerequisite(s) : Stat 252 and Stat 231

STAT 255 CATEGORICAL DATA ANALYSIS

Categorical data, cross-classification tables, analysis using log-linear and logic models; casual analysis, incomplete cross-classified tables.

Credits : 3 units

Prerequisite(s) : Stat 252

STAT 256 STATISTICAL METHODS III

This is an introductory course in experimental designs. It covers topics on principles of experimentation, complete randomized designs, randomized complete block designs, latin-square design and other designs.

Credits : 3 units (2 units lec/1 unit lab)
Prerequisite(s) : Stat 252

STAT 257 EXPLORATORY DATA ANALYSIS

Displaying and summarizing batches; re-expressing data, analyzing two and three-way tables, robust and resistant measures, regression.

Credits : 3 units (2 units lec/1 unit lab)
Prerequisite(s) : Stat 252

STAT 258 MULTIVARIATE METHODS

This is an introductory course in multivariate methods that includes matrix operations in multivariate data, multivariate normal distribution, inferences in multivariate data and multivariate techniques such as principal component analysis, factor analysis, discriminant and classification analysis and clustering.

Credits : 3 units (2 units lec/1 unit lab)
Prerequisite(s) : Stat 252

STAT 262 NON-PARAMETRIC STATISTICAL TECHNIQUES

Binomial Test, Chi-squared one sample test, Kolmogorov-Smirnov one sample test, one sample Runs test, sign test, Wilcoxon matched pairs, rank test, median test, Kolmogorov-Smirnov two sample test, Wald-Wolfowitz run test, Cochran's Q test.

Credits : 3 units
Prerequisite(s) : Stat 231

STAT 271 SPECIAL TOPICS IN STATISTICS

This course includes any topic of interest in Statistics which are not listed as regular course. This course may be taken more than once provided that different topics are discussed.

Credits : 3 units
Prerequisite(s) : Instructor's consent

STAT 290 SEMINAR COURSE IN STATISTICS I

This course is designed to introduce the students to topics that are not covered in other statistics courses. It requires the student to attend and participate in Statistics seminars.

Credits : 2 units
Prerequisite(s) : Instructors consent

STAT 291 SEMINAR COURSE IN STATISTICS II

This is the course in which the student prepares and presents his/her thesis proposal.

Credits : 2 units
Prerequisite(s) : Instructor's consent

STAT 300 MASTER'S THESIS

This is a research work on the application of statistical methods and evaluation of the methods used.

Credits : 6 units